

JOHNSON
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Attachment # 11
Page 1 of 41

Fax Transmittal

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TO: Tom Brantley

Date: 6/10/03

Time: 4:50 PM

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Ref: Report

From: Wayne Vearil

*Exceeding Your
Expectations!*

We are transmitting 2 Pages (including cover).

If you have any questions please call me at 926 9556.

Thanks for the help.

Wayne Vearil

Wayne Vearil
Johnson Controls, Inc.

Winner of EPA's Green Lights *Ally of the Year* Award
Winner of the 1992 *Best Service Branch* Award

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JOHNSON
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To: Tom Brantley
Subject: Proprietary Notice
Date: June 10, 2003

Tom
Disregard the proprietary information notice on The Facilities Efficiency Report dated June 3, 2003. You may distribute copies as needed.

If you have any questions or comments please contact me at 850 926 9556.

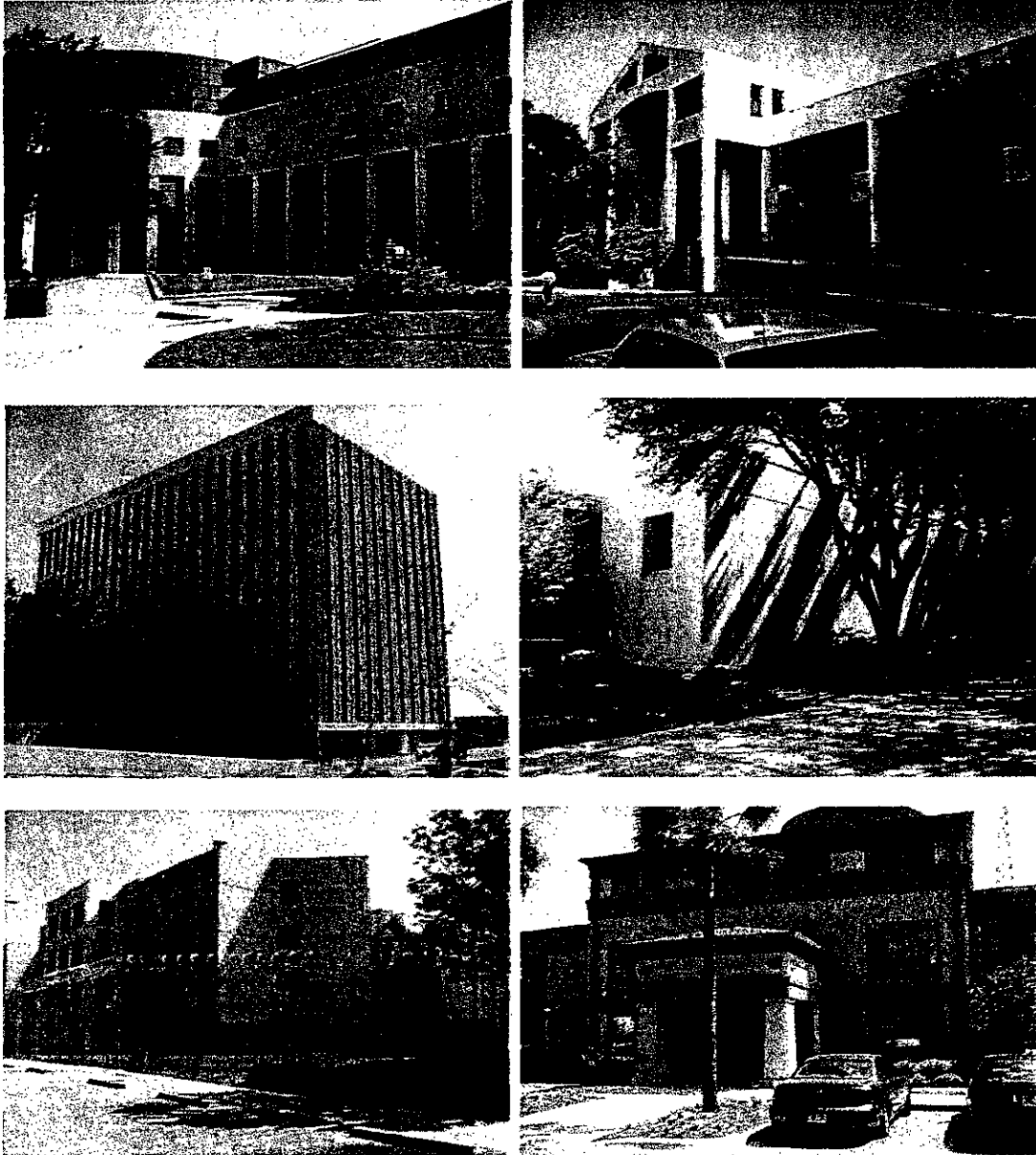
Sincerely,

Wayne Vearil

Wayne Vearil

Johnson Controls, Inc.

Facility Efficiency Report for:



**Courthouse, Main Library, Bank of America,
Jail and Sheriff's Administration Facilities**

Leon County Government

Tallahassee, Florida

Submitted by:

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06/03/03

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PROPRIETARY INFORMATION

This information is proprietary to Johnson Controls, and is not to be distributed or shared with those outside of Leon County Government

Executive Summary

Johnson Controls is helping our customers create **Quality Building Environments™**. The challenges of managing buildings and working to meet today's increasing challenges of providing a quality work environment while reducing operating costs can often be overwhelming. That overwhelming feeling is quickly disappearing through the use of performance contracting. It starts by revitalizing and upgrading the major environmental systems in your facilities. **We help determine what to do, how to do it, and how to fund it.** We ensure that all improvements to your facility will pay for themselves and generate additional funds for reinvestment. We also ensure that facility environmental criteria, such as temperature, humidity and lighting levels are maintained within established standards.

Johnson Controls has completed a preliminary analysis of the Leon County Courthouse, Main Library, Bank of America, Jail and Sheriff's Administration facilities. We estimate that the **potential annual utility savings opportunity for Leon County Government is approximately \$329,000 at these five facilities.** This savings estimate includes utility savings only and does not include any maintenance savings that will also accrue due to the project. These identified savings and an improved building environment will result from implementing the recommended measures. During a multi-year partnership with us, these potential savings can pay for the improvements and services necessary to achieve them.

We believe that Performance Contracting is your best opportunity to deal effectively and completely with the challenge of providing high quality work environments while improving your facilities and financial performance. With that in mind, consider expanding your partnership with Johnson Controls.

Overview of Facilities

We have completed our preliminary walk-through of the Leon County Courthouse, Main Library, Bank of America, Jail and Sheriff's Administration facilities. The following report describes some of the opportunities that will help improve comfort and the building environment while decreasing operating costs. We feel that the major savings opportunities are identified in this report and any other opportunities that may exist would be identified and developed in the full comprehensive project.

Johnson Controls goal is to reduce energy and operational costs for our customers. However, we are also committed to showing our customers how to reduce financial risks, by planning for removal and replacement of deteriorating equipment. We feel that Leon County Government should take a comprehensive look at all of the electrical and mechanical systems in the selected buildings so that the proper course of action can be taken to assemble a successful program. Johnson Controls can provide all of the required resources to study the facilities and to assist Leon County Government in the development and implementation of a performance contracting program. Together we will finalize the selected plan of action and Johnson Controls will then manage and install all of the selected improvement measures. Once the project is completed, Johnson Controls will then provide customer consultation and monthly monitoring of the savings that will be financially guaranteed.

The goal of our report is to communicate to you the opportunity to optimize the dollars that are being spent to operate and maintain your facility. This report is provided at no cost to Leon County Government and has been generated through statistical data and a walk-through survey of your facilities. Listed below are just a few of the benefits that Leon County Government will realize by pursuing the facility enhancements outlined in this report:

- ☒ Improved environment quality, such as temperature, humidity, ventilation and lighting
- ☒ Improved occupant comfort
- ☒ Improved staff productivity
- ☒ Savings of capital budget dollars
- ☒ Operating cost reduction
- ☒ Future operating cost containment

What is Performance Contracting?

Performance Contracting is a performance-based, turn-key approach to implementing self-funding building improvement projects. **Performance Contracting eliminates your risk in two ways.**

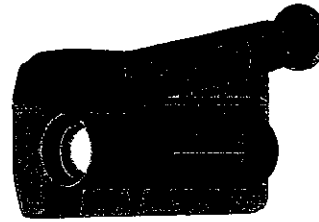
First, Johnson Controls fixes the price for the entire project when the contract is signed. Leon County Government will not have to assume the risk that individual improvements may cost more than originally predicted.

Second, Johnson Controls guarantees that the projected savings will occur. Our guarantee shifts performance risk to Johnson Controls. Johnson Controls will reimburse Leon County Government if the guaranteed energy savings are not realized.

Why is Performance Contracting Unique with Johnson Controls?

- ☒ We bring over 100 years of proven experience to our customers.
- ☒ Each program is custom designed to fit the needs of each customer.
- ☒ Project results are financially guaranteed to eliminate risk for our customers.

Johnson Controls performance contracting process begins with the preliminary investigation of the facilities and analysis of your conditions and requirements. Based on these preliminary findings, your decision to proceed will initiate a detailed engineering study. Our unique **JCFacts™** consultation will then provide you with the opportunity to select the best combination of improvements for your facility. Upon execution of contracts, we then implement the recommended measures and begin the multi-year process of ensuring their results. **Guaranteed.**



The Photo Tour

Johnson Controls has conducted a walk-through and preliminary evaluation of the Leon County Courthouse, Main Library, Bank of America, Jail and Sheriff's Administration facilities. The photo tour is designed to introduce opportunities and specific concerns that are observed during a walk-through. These opportunities and concerns should then be addressed under a comprehensive program. The examples listed in the photo tour are just a few of the items that could be improved for the operating efficiency at the selected Leon County Government facilities to be maximized. We are sure that many of the items mentioned in this report have been brought to your attention before, however, we are now offering a solution that will address all of these needs under one comprehensive program.

Existing Conditions

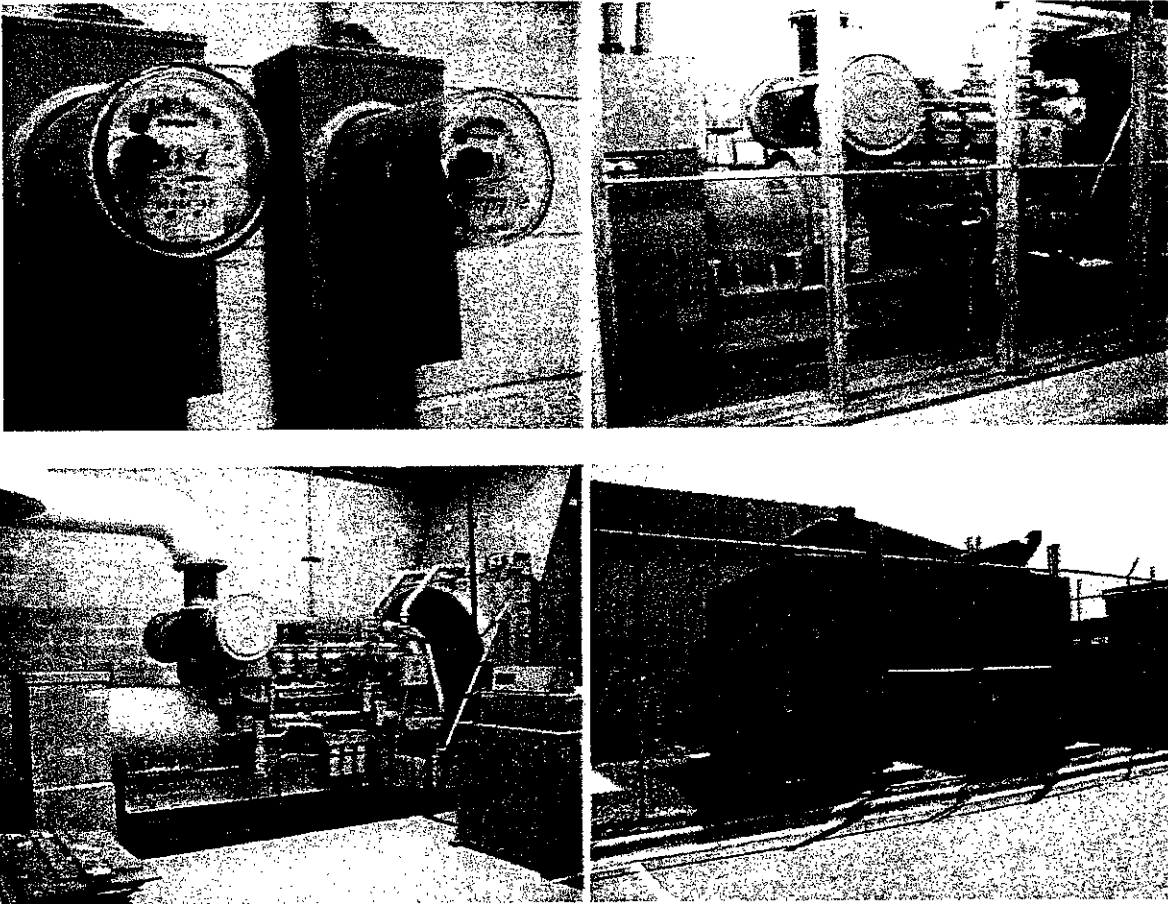
We see an excellent opportunity for equipment improvements in the selected Leon County Government buildings.

As discussed, Johnson Controls has conducted walkthroughs in the buildings. You will see photos of some of these site conditions in the next section as we outline some of our proposed facility improvements and/or conservation measures (FIMs). This report includes some major opportunities. Our final detailed engineering study will be a very thorough investigation of all building systems and will include all applicable measures.

Electric Rates

FIM: Electric Load Management and Emergency Generators

Courthouse, Jail and Sheriff's Administration Facilities



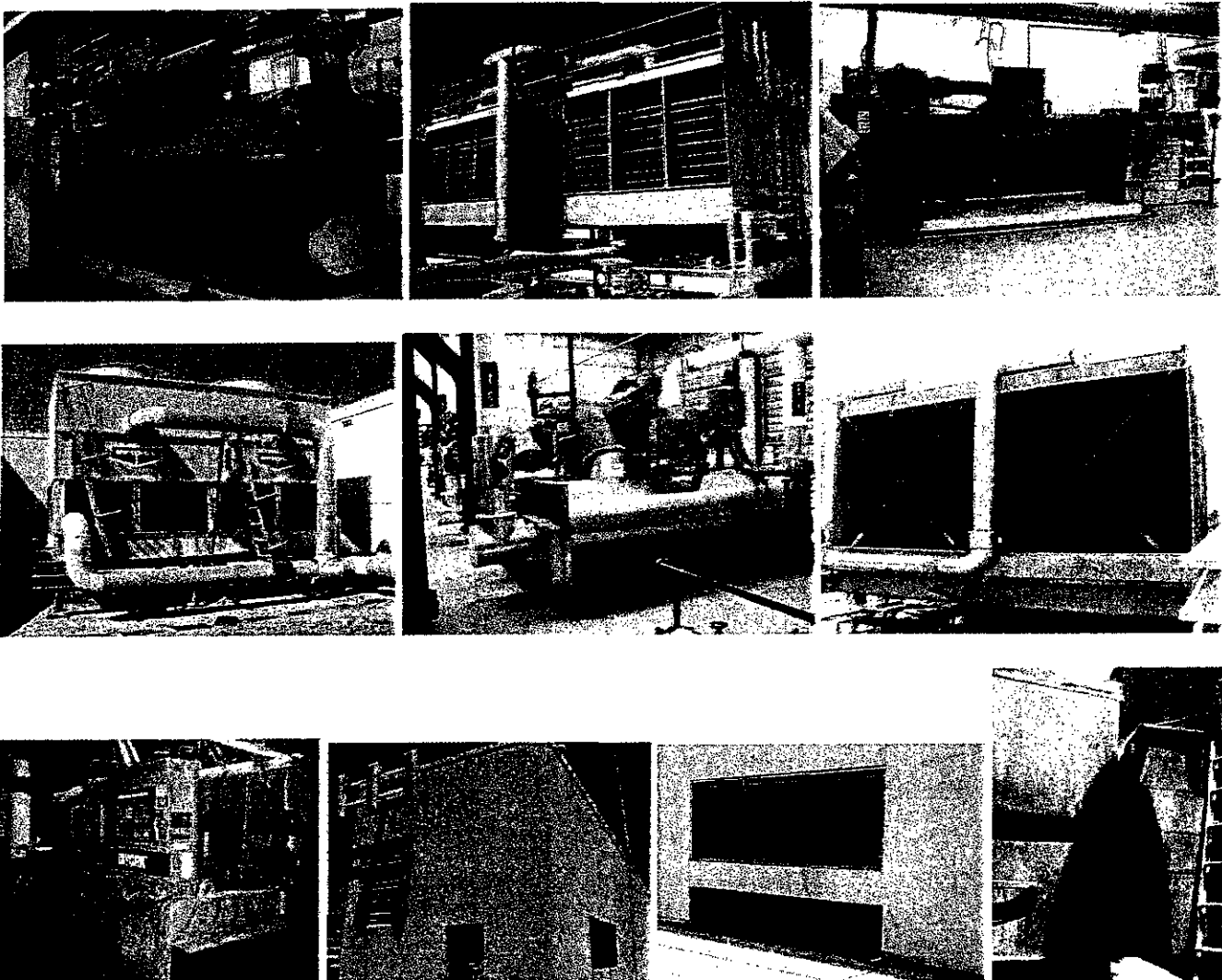
Currently, the Courthouse and Jail facilities are provided electric service by Tallahassee Utility Services under their GSLD (General Service Large Demand) rate. This is a rate applicable to large customers (demand exceeds 500 KW) and includes KWH energy charges and KW demand charges. Another rate is available that may be obtained whereby a significant discount is offered by the utility if the customer is willing to shed 50% or more of its load when requested to do so by the utility. The load shed in these facilities may be obtained by the operation of existing emergency generators. The operation of generators, if required, would be for short periods on an infrequent basis when the utility experiences problems during peak demand periods.

The utility offers an Interruptible General Service Demand rate that provides approximately 15% discount on KWH energy charges and a 43% discount on KW demand charges. Therefore, there is significant opportunity for savings with this rate.

Although the Sheriff's Administration facility also has emergency generators, it has a maximum demand of approximately 275 KW and would not meet the 500 KW minimum threshold for the interruptible rate. However, it may be possible to consolidate the Jail and Sheriff's Administration facilities two electrical services into one service or account to allow the Sheriff's Administration facility to qualify for the Interruptible rate as well.

Central Plant and HVAC System Retro-fits and Modifications FIM: Cooling Tower and Chiller Optimization

Courthouse, Library, Bank of America and Jail Facilities



These four facilities each have a central chilled water plant and this FIM is believed to be applicable to each. This FIM will minimize the energy consumed by the chillers and cooling towers. This can be achieved by the installation of variable frequency (speed) drives (VFDs) on the cooling tower fans and modifying controls to allow the condenser water temperature to drop below the typical 85 °F design control point in accordance with chiller manufacturer's recommendations.

Most chillers will experience an approximate 1% or more drop in power with each °F drop in condenser water temperature. In addition, utilizing VFDs on the cooling tower fans is much more energy efficient than cycling the fans on and off and will reduce maintenance requirements as well. This FIM may reduce the energy consumption of the chillers and cooling towers by approximately 5% on an annual basis. The chilled water plants include two water-cooled centrifugal chillers at the Courthouse and Jail and one each at the Library and Bank of America building. Each facility has a cooling tower with two cells and two fans with a common condenser water return.

FIM: Replace Grossly Oversized Steam Boiler and Trap Systems

Jail



The Jail has a single steam boiler that is fired by natural gas and operates continuously. Steam is provided through a piping distribution system to numerous domestic hot water converters, the kitchen and the laundry. Two separate hot water boilers provide space-heating needs.

Based upon observations and analysis of the natural gas consumption, the single steam boiler is grossly oversized. In addition, with a single boiler there is no redundancy. Natural gas consumption for the entire jail during the summer months averages approximately 10,000 therms per month. If the steam boiler operated at full capacity during the month, the monthly natural gas consumption for the boiler alone would be approximately 90,000 therms. Since some of the natural gas consumed is for the kitchen and laundry, the boiler is believed to be significantly oversized. Although the boiler is a maximum of 80% efficient when operating at full capacity with the burner tuned; the efficiency drops off significantly at low loads. The existing boiler has a nominal rating of 300 HP and has a burner that cycles the firing of the boiler on and off. The burner was observed to short cycle frequently and the burner fan must purge the boiler combustion chamber and heat exchange surfaces before and after each burner firing. According to industry sources, the effective efficiency of the boiler has been reduced from 80% to perhaps only 55% due to it being grossly oversized and having a cycling type burner.

A new properly sized steam boiler could be installed with efficiency near 83% at all loads. To improve steam plant redundancy, two smaller boilers could be installed. New steam boilers are available with burners that modulate the operation of the burner down to approximately 10% capacity for efficient part load operation. Furthermore, new burner controls would allow the fuel to air ratio to be much more closely regulated and the efficiency to be maintained under all operating conditions.

In addition to addressing the steam boiler, a comprehensive project would also address the distribution system, condensate systems and the numerous steam traps to address any leaks and inefficiencies. Many of the steam traps are likely oversized and new steam traps are available that would eliminate or minimize steam blow by and maintenance requirements. It appeared that some of the steam venting was excessive.

FIM: Reduce HVAC System Operating Hours

Courthouse, Library and Sheriff's Administration Facilities

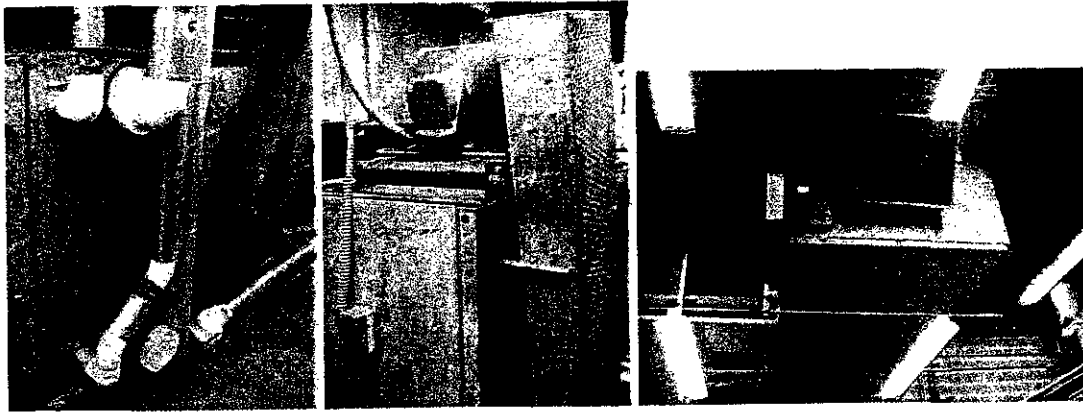
The HVAC systems in these facilities are believed to operate 24 hours per day based upon observations and discussions with Staff. Although there are some areas in the referenced facilities that require 24-hour HVAC system operation, many areas are not occupied during nights and weekends. Staff indicated that many of the HVAC systems were scheduled off during nights and weekends many years ago in some buildings but this was eliminated based upon comfort complaints. Comfort complaints were experienced in the morning after system start up and during certain periods of the year, some of the systems were reported to be unable to recover and reach set point.

All of the facilities have Building Automation Systems (BAS) that could provide optimized HVAC system morning start-up control sequences to insure the building is comfortable when occupants arrive. However, additional space temperature sensors would probably need to be installed in some buildings since many of the space thermostats are not currently tied into the BAS (library for example). HVAC systems should be able to have their hours of operation reduced to approximate building occupied hours during mild weather with the HVAC operating hours being automatically increased significantly during extreme weather conditions as required. With appropriate space sensors, optimized start-up BAS control and careful implementation, operating costs may be minimized while maintaining comfort.

A local example of the potential savings associated with this FIM is the Florida Supreme Court Building. The building has a Johnson Controls BAS installed. The annual metered electric consumption was reduced by 38%, representing annual savings of \$106,943. These savings were attributable to a few HVAC related operational changes implemented around December 1998. The primary operational change implemented was reducing the hours of operation of the HVAC system from continuous operation to weekday corresponding to the building occupancy. In addition, concurrent operation of the boiler and chiller was reduced significantly thereby eliminating a lot of reheat energy that had been required at VAV terminal units with hot water heating coils (this condition is believed to occur in some Leon County facilities such as the Library).

FIM: Convert from Constant to Variable Air Volume Control

Jail Facility and Bank of America



In the Jail facility, there are a total of approximately 30 AHUs (air handling units) and 14 FCUs (fan coil units). Approximately 19 of these AHUs, including all of the AHUs serving the detention pods, and all of the FCUs are what is referred to as single zone constant air volume units. These units could be converted from single zone constant air volume to single zone variable air volume (VAV) control to provide two benefits, a significant reduction in fan operating costs and to improve part load dehumidification performance. The potential for energy savings is significant; perhaps 50% of the current fan operating cost or more.

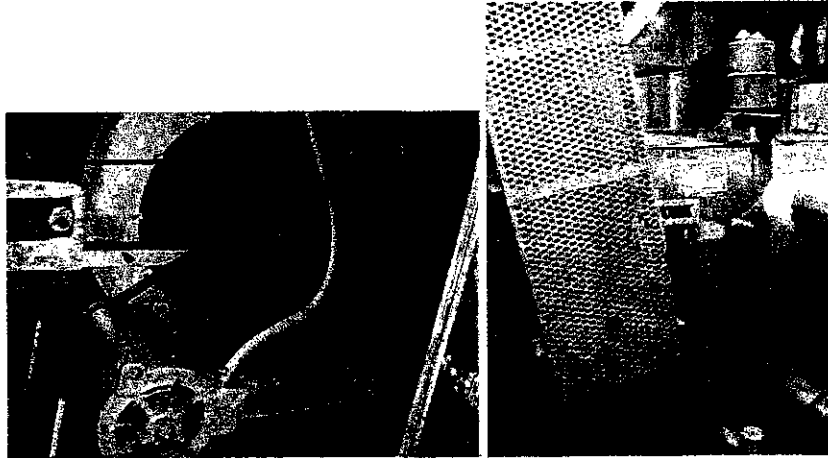
These chilled water single zone constant air volume AHUs and FCUs provide temperature control at part load by modulating the chilled water valve. Since the current control strategy results in the supply air temperature leaving the cooling coil being raised significantly at partial cooling loads, very poor dehumidification occurs at part load.

Converting to single zone VAV control could be accomplished by either (1) installing a variable frequency drive (VFD) to control motor speed for maximum efficiency or (2) installing a damper with automatic operator in the supply duct (small AHUs and FCUs). The space temperature would control the total airflow delivered by the unit by either controlling motor speed or the damper position. A discharge air sensor could control the chilled water valve to maintain a constant cold supply air temperature for good dehumidification.

In the Bank of America building, the multi-zone AHUs that serve each floor could be converted from a constant to variable air volume air distribution. This could be accomplished by replacing the existing ductwork with new ductwork and VAV boxes. Alternatively, the existing low pressure ductwork could remain and new self contained VAV diffusers with integral thermostats could be installed for a cost effective VAV conversion. However, improved comfort conditions would have to be the driver for a VAV conversion project in the Bank of America building since the energy savings from a conversion will be relatively small. Building operations staff did not believe comfort complaints in the building were excessive.

FIM: Install Variable Frequency Drives on Variable Air Volume AHUs

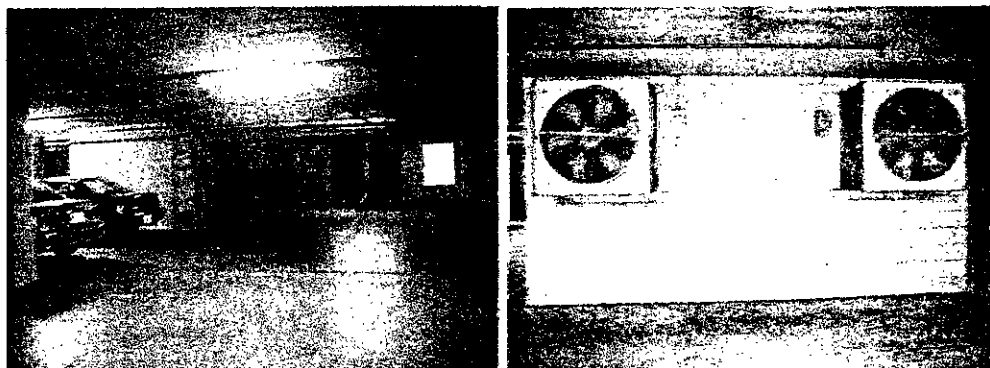
Library and Jail Facilities



There are approximately 7 AHUs (air handling units) at the Library and 8 AHUs at the Jail that are variable air volume and are equipped with inlet guide vanes for capacity control. To significantly lower fan motor power requirements, these AHUs could have their inlet guide vanes removed and have variable frequency drives (VFDs) installed to control motor speed. In addition to energy savings, inlet guide vanes have mechanical linkages that require significant maintenance as they age. The VFDs will eliminate this maintenance problem and will also lower fan noise levels transmitted to building occupants.

FIM: Demand Controlled Parking Garage Ventilation

Courthouse



There are four levels of parking garage that have ventilation fans that operate on a continuous basis even when there are no cars operating in the garage. Most enclosed garages are ventilated based upon standards that are based upon emission assumptions that are outdated; cars are a lot cleaner today.

However, demand controlled ventilation of enclosed parking garages is technically sound and finding increased application. Demand controlled ventilation is achieved by installing carbon monoxide sensors in the garage and variable frequency drives (VFDs) on the fans. The fan speed is then controlled to maintain carbon monoxide at recommended levels. Since fan power varies as the cube of the ventilation rate / fan speed, significant energy savings will accrue. The potential for energy savings is perhaps 60% of the current fan operating cost or more.

FIM: Control System Modifications, Commissioning and Optimization

Courthouse, Library, Jail and Sheriff's Administration Facilities



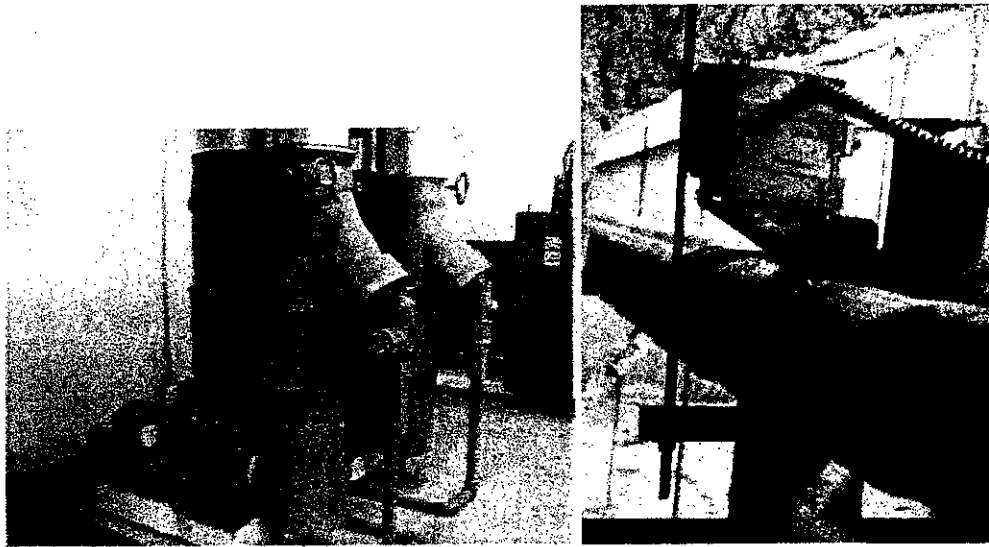
This measure involves performing modifications, commissioning and optimizing the BAS and HVAC controls in the buildings. The benefits with this FIM will be numerous including improved comfort and system operation. However, the primary benefit relative to a self-funding project will be the energy savings associated with modifications that include:

1. At the Courthouse, fuller operation of economizer operation on the AHUs. During the recent field survey, the outdoor air temperature was below 50 °F but none of the AHUs that were equipped with economizer operation that were surveyed were in the economizer operating mode.
2. At the Sheriff's Administration, operation of hot water boilers and resetting multi-zone AHU hot deck temperatures and perhaps cold deck temperatures (relative humidity will be maintained) according to space needs so as to minimize energy consumption.

3. At the Jail, re-set the cold supply air temperature on AHU 2 that serves the medical ward and utilizes a constant air volume terminal re-heat control strategy. This will minimize inefficient reheat. The re-set strategy could be based upon space needs but would be limited based upon space relative humidity sensors so that space relative humidity levels are controlled.
4. At the library, optimize the operation of boilers and chillers and the cold supply air temperature off of AHUs so as to minimize concurrent operation of heating and cooling that results in reheat at the VAV terminal units with hot water heating coils.

FIM: Variable Volume Chilled Water Pumping

Library



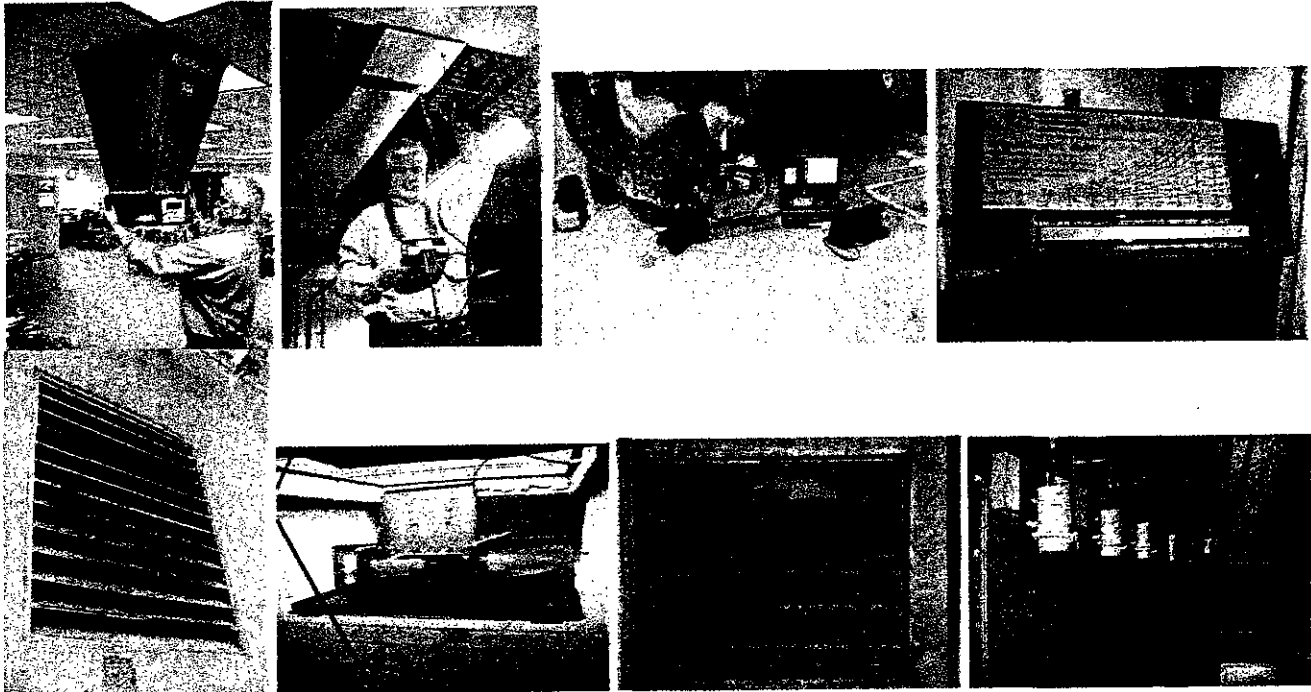
The library operates with a single chilled water pump rated at 50 horsepower that supplies a constant volume of chilled water to seven AHUs in the building. Variable volume pumping based upon the actual chilled water load could reduce pumping energy requirements significantly. Variable volume pumping could be achieved by replacing 3 way chilled water valves with two way valves, installing a variable frequency drive (VFD) on the pump and installing a bypass valve so as to maintain minimum chilled water flow through the centrifugal chiller. Varying the flow through the centrifugal chiller in accordance with manufacturers recommendations is technically sound and is finding increasing application.

FIM: Trim Pump Impellers Bank of America



There is a single condenser water pump and a single chilled water pump at the Bank of America Building. The chilled water pump discharge valve was noted to have been marked and partially closed by Test and Balance (TAB) personnel. The valves were intentionally partially closed by TAB personnel during the construction process so as to throttle and reduce the actual flow to that specified on the construction drawings. A much more efficient alternative is to perform TAB diagnostics to determine the actual pump impeller that is required for the as-built conditions, disassemble the pump and trim the impeller to the required size. This will allow the discharge valve to be fully opened and pump motor power requirements will be reduced significantly. JCI has experience in performing this type of service in existing installations.

FIM: Indoor Air Quality, Thermal Comfort and HVAC System Test and Balance and Commissioning



It is important that HVAC systems are tested, balanced and commissioned properly during the construction process. In addition, systems need to be re-checked and re-commissioned as a part of the on-going operation and maintenance process. The adequacy of the original design may be reviewed in light of current standards, codes and the current use of the building or portion thereof, particularly when occupancy related changes occur. ASHRAE recommends that outdoor air delivery systems be checked periodically. Indoor Environmental conditions impact the comfort, productivity and potentially the health of building occupants.

JCI has the capability to perform Indoor Air Quality evaluations and HVAC system test and balance (TAB) measurements, adjustments and diagnostics. Johnson Controls Jacksonville office is certified by NEBB (National Environmental Balancing Bureau, the largest national TAB professional organization) to provide certified TAB services. Scott Forsyth, PE, a Project Development Engineer in the Jacksonville office, is a NEBB certified TAB supervisor.

Some HVAC system measurements were made during the recent survey, particularly in the Bank of America building, and results include the following.

The last four pictures on the prior page are the Bank of America building. The pictures depict the outdoor air intake at the mechanical penthouse on the roof that leads to a cavity in which a propeller fan is located that discharges into a shaft that provides fresh air to outdoor air dampers in each of the return air plenum equipment rooms. The outdoor air supply fan had its disconnect switch off, was severely rusted and degraded and has evidently been inoperative for many years. Building operations staff indicated that they were told by prior operations staff that operation of the outdoor air supply fan is not necessary. Some outdoor air is drawn through the inoperative outdoor air fan. Building plans were reviewed and based upon measurements, it appears that the propeller fan is grossly oversized based upon current building occupancy loads. However, a properly sized outdoor air supply fan would be a good idea to help insure delivery of required outdoor air quantities under all operating conditions (such as wind and temperatures). Finally, the current installation appears to meet code. However, the relative close proximity of the cooling tower to the building's outdoor air intake may allow for the introduction of cooling tower discharge air into the building under certain operating conditions (see the last 3 pictures in the "Cooling Tower and Chiller Optimization FIM" on page 8). Condenser water treatment to prevent biological growth could be improved.

In the Bank of America, outdoor air was measured at the outdoor air damper on each of three floors, the central intake at the penthouse on the roof and at a number of restroom exhaust registers. Results were as follows:

Bank of America Spot Ventilation Data

Location	Design CFM	Actual Measured CFM
1 st Floor AHU	3,310	830
5 th Floor AHU	3,310	820
6 th Floor AHU	3,310	50
Penthouse intake for entire building	26,500	4,030
1 st Floor Men's Restroom	225	65
5 th Floor Men's Restroom	225	55
6 th Floor Men's Restroom	225	80
8 th Floor Men's Restroom	225	85

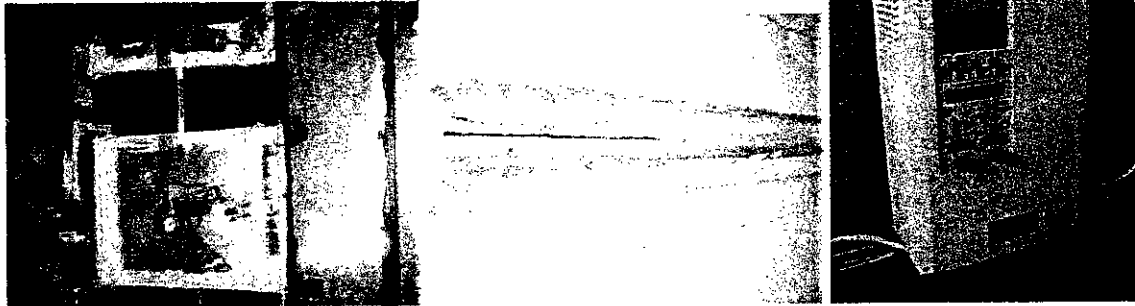
Measurements indicate that there is a significant ventilation deficiency on the 6th floor. Although the total building occupancy was not determined in this preliminary evaluation, the current total outdoor air quantity that was measured and is introduced into the Bank of America building, 4,030 CFM, would allow for an occupancy of approximately 200 people ($4,030 \text{ CFM} / 20 \text{ CFM/person} = 201 \text{ people}$). The building currently has approximately 80% of it's space leased. However, when fully occupied, it is believed that the occupancy of the building could easily exceed 200 by a large margin. ASHRAE Standard 62 indicates a maximum occupancy of 7 people per 1,000 square feet of net occupiable space. In addition to outdoor air quantities, exhaust air quantities were measured in four restrooms and found to be only a fraction of the design value.

Bank of America building operations staff indicated that an indoor air quality evaluation was recently performed on the building and it resulted in the ductwork being cleaned and the air handlers were also cleaned and their liner replaced. The inside of an AHU was inspected and found to be very clean. However, staff did not believe that the prior evaluation included any ventilation air flow measurements or adjustments.

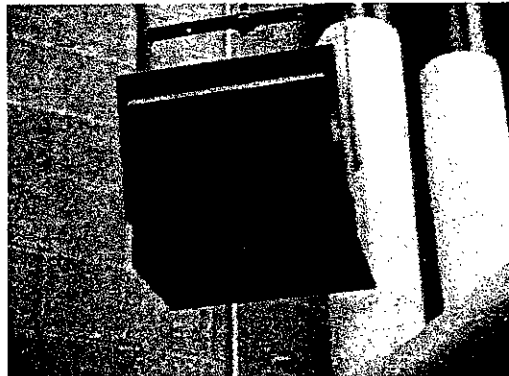
In addition to improving the indoor environment quality, a more comprehensive TAB evaluation may uncover additional opportunities for operating cost reduction. A TAB/ re-commissioning project could be included in an overall performance contracting project. Ideally, it should be performed as a part of the Project Development Phase of the project in order that potential FIMs identified during the process are included in the Installation Phase of the project.

Miscellaneous HVAC FIMs

Various Facilities

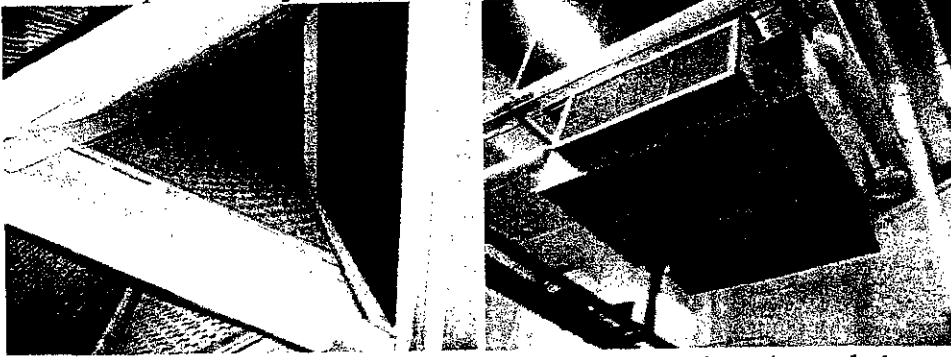


1. In the Courthouse, the building was observed to be operating at a negative pressure. This would be caused by the exhaust air quantity exceeding the outdoor air introduced at the AHUs. The current installation and control strategy results in the outdoor air quantity not being constant but being reduced significantly most of the time with AHU supply fan volume / VFD speed. The minimum outdoor air quantity should be maintained constant at all times. Some AHUs were observed to have minimum outdoor air ducts that were partially blocked with insulation. An HVAC system test and balance on the exhaust and outdoor air systems with appropriate modifications is recommended so that the building operates at a slight positive pressure. This would improve the indoor air quality and improve occupant comfort.



2. In the Courthouse, heating system capacity is inadequate in many areas and occupant comfort suffers. Additional heat could be installed as a part of a self funding project even though it would increase facility operating costs. Occupant comfort and productivity would increase. Numerous electric unit heaters such as that pictured above are installed in equipment rooms but provide no benefit to building occupants.
3. In the Courthouse, the two secondary pumps were observed to be operating at different speeds for an unknown reason. The VFDs should be operating at the same speed for maximum efficiency.

4. In the Library, VAV box controls could be upgraded. One upgrade option would be to install cable in the ceilings to allow VAV box communication with the existing building automation system. Another option would be to replace existing VAV box controllers that are outdated with new DDC controllers that would provide improved performance and additional benefits.



5. In the jail, the filters that were observed in some units, such as that pictured above, were flat panel filters with spun media having a very low dust spot efficiency. In addition, some gaps were observed that allowed air to bypass filters. In this application, ASHRAE recommends filters having a higher efficiency such as pleated filters having a nominal 30% dust spot rating. One inch pleated filters are available with a 20% efficiency rating and low pressure drop suitable for the fan coil units. Upgrading filters and eliminating gaps would greatly reduce the need to clean coils and drain pans. This would improve the indoor air quality.

Lighting Systems Retro-fits and Modifications

Bank of America, Jail and Sheriffs Administration with Limited Application at other Facilities



The interior of the Bank of America, Jail and Sheriff's Administration facilities are provided interior lighting in many areas from fluorescent lighting fixtures equipped with standard lamps and ballasts.

However, a significant portion of the Jail interior, such as the large open common areas in each detention pod, was provided light from metal halide HID lighting fixtures. Some areas in the Bank of America building were noted to have incandescent lighting, which is very inefficient.

Numerous fluorescent fixtures were physically examined and most all of the fluorescent fixtures utilize standard T12 lamps, generally 4 foot long, and standard magnetic ballasts. These fluorescent fixtures utilize old less efficient technology. These facilities would benefit from a complete lighting system conversion to high efficiency T8 lamps and electronic ballasts.

Additional automatic lighting controls could be applied for additional savings, such as the use of day-lighting controls to corridors in front of staff dining and in the visitor's area at the jail.

The Courthouse and Library were noted to have already undergone recent lighting efficiency retro-fit projects. Staff indicated that most of the other significant county facilities have undergone lighting retro-fits as well.

The economics of a lighting retro-fit project should be favorable for the facilities that have not already been retro-fitted based upon observations and input from staff. The lighting in the Jail and Sheriff's Administration is generally operated long hours and a large number of the lights operate 24 hours per day. On the down side, installation labor costs will be high in the Jail due to the inefficiencies of performing electrical work inside an operational correctional facility. However, Johnson Controls has experience performing lighting retro-fit projects in correctional facilities in Florida.

In addition to reducing energy operating costs, a lighting retro-fit will reduce maintenance requirements and costs significantly. Currently, fluorescent lamps and ballasts have to be replaced on a frequent basis. Many of these are located in relatively inaccessible locations. New and reliable electronic ballasts are available with a 6 year warranty that includes a labor allowance in addition to material replacement. Also, the existing fixtures that are equipped with non-standard and expensive 2 foot "U" lamps may be retrofitted to accept standard lamps. Staff expressed concern over jail perimeter lights that require a bucket truck from a remote site for service.

Although the opportunity for lighting related retro-fits is limited in the Courthouse and Library, there are some opportunities in these facilities. An example is the application of automatic lighting controls, such as the loading dock at the library. This space was noted to have 25 two lamp fixtures that operate for long hours even though the space is frequently unoccupied. These lights might be automatically controlled by occupancy sensors to achieve large savings.

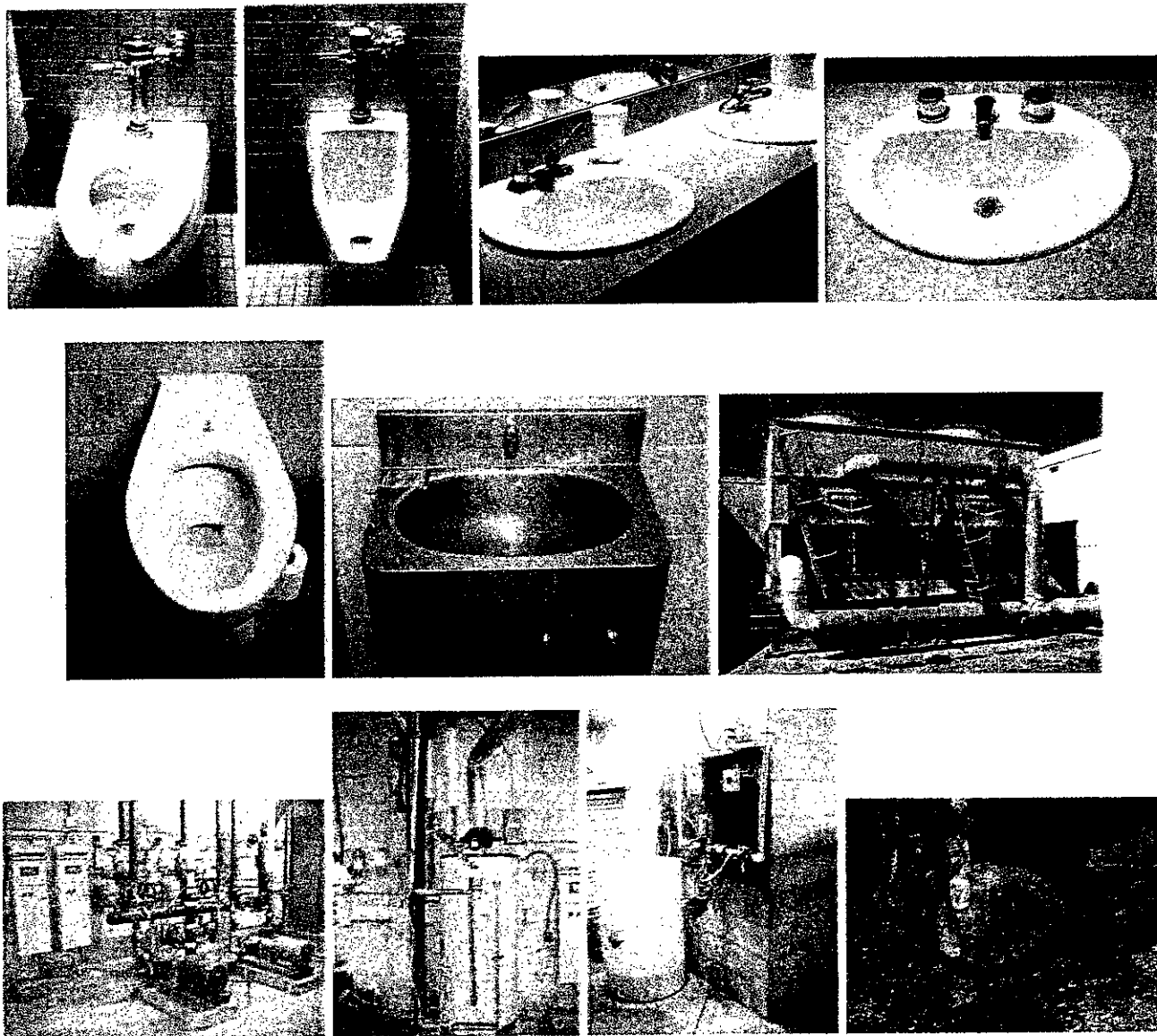
Lighting levels were measured at a number of locations and were generally found to be at or below recommended standards. The following were noted and are provided for information:

1. Lighting levels in individual cells were measured and found to be: 16 foot-candle (fc) on the table, 17 fc on the lavatory, 14 fc on the floor in the center of the room and 36 fc on the top bunk (under the light fixture). Staff indicated that they believed that 30 fc was recommended from a correctional facility industry source.

2. Lighting levels varied significantly among courtrooms and were far below recommended levels in some courtrooms. For example, small courtroom 3F was equipped with 2 x 4 foot deep cell parabolic fluorescent lighting fixtures and had lighting levels between 55 and 60 fc on the attorney's and judge's desks. In comparison, large courtroom 343 was equipped with small fluorescent down lights and had lighting levels of only 14 fc on the attorney's desk and 19 fc on the judge's desk. These are only 25 to 30 % of the recommended light level.

A lighting retro-fit could address any lighting deficiencies and needs that may exist in the facilities, including increasing lighting to recommended levels.

Water Conservation and Plumbing System Retro-fit Courthouse, Library, Bank of America, Jail and Sheriff's Administration Facilities



There are a number of opportunities that were identified for reduction in water and sewer charges.

Existing plumbing fixtures consume greater quantities of water with each flush or use as compared to current standards. Lavatories may be equipped with aerators and automatic self closing faucets where

they are not already so equipped. Plumbing fixtures may be replaced with fixtures that are designed to flush effectively while consuming significantly less water.

The make-up water for the Main Library cooling tower is believed to be provided water from the building water meter and for which sewer charges apply.

In the Bank of America building, there are two domestic water services serving the tower to which sewer charges apply. These two services may be consolidated with a properly sized single meter resulting in a significant reduction in fixed monthly service charges.

Water service types, meter sizes and rates would be analyzed in detail in a comprehensive project so as to minimize water and sewer charges.

Fire Service Fees Bank of America Building

The City of Tallahassee includes fire service fees on the utility bills.

In reviewing the Bank of America building's utility bills, it was noted that a fire service fee of \$761 per month was included on three separate accounts/bills for the Bank of America complex, (1) the tower, (2) the 1st and 2nd floors of the annex building and (3) the basement of the annex building.

As indicated on the City of Tallahassee Utility Rate sheet contained in the Appendix, the fire service fee for commercial property is based upon the square feet of the property. The tower has been charged the correct amount, the maximum amount for facilities over 50,000 square feet, \$761 per month. However, the annex building, which totals less than 20,000 square feet, should have been charged a total of \$152 per month according to the rate sheet rather than \$1,522 (\$761 + \$761).

It is not known if the electric bill for Voice Stream, which occupies approximately one third of the fifth floor, also includes Fire Service Fees that may be duplicated or excessive. Voice Stream has their own electric service and meter.

Calls were made to the City of Tallahassee to discuss the Fire Service Fee methodology. Mark Simpson (891-6818), indicated that the methodology for handling buildings with multiple electric accounts was currently under review. However, he indicated that since the property was recently purchased by Leon County Government, it should be classified under the Governmental Fire Service Fee rate of \$7.33 per 1,000 square feet. He indicated that a request would need to be made by the County for the property to be re-classified.

Conclusion

Improvement measures such as performing modifications so as to obtain a more favorable electric rate, optimizing the operation of chilled water plants, replacing grossly oversized boilers, converting constant air volume AHUs to VAV, installing VFDs, minimizing concurrent cooling and heating system operation, performing HVAC system testing , balancing and commissioning, reducing HVAC system operating hours and retro-fitting the lighting and plumbing systems with current efficient technology will improve system reliability, improve occupant comfort and significantly lower operating and maintenance costs.

Savings Analysis

- ☒ Current utility costs
- ☒ Comparative energy analysis
- ☒ Operational savings potential

Current Utility Expenses

We were provided with some utility consumption and cost information from Staff. However, we also contacted the City of Tallahassee Utility Services and obtained electric, natural gas and water and sewer consumption and cost data directly from the utility on most all of the surveyed facilities. Annual cost information for the most recent 12 months is summarized as follows:

Facility and Annual Utility Cost Data:

Facility	Sq. ft.	\$ Electric	\$ Natural Gas	\$ Water and Sewer	\$ Total All Utilities	\$ Total All Utilities / Sq. ft.
Jail	367,490	\$407,400	\$193,090	\$144,540	\$745,030	\$2.03
Sheriffs Administration	41,400	\$91,480	\$13,150	\$4,330	\$108,960	\$2.63
Courthouse	280,000*	\$416,700	0	\$9,670	\$426,370	\$1.52
Main Library	88,230	\$159,320	\$18,210	\$10,560	\$188,090	\$2.13
Bank of America	135,000*	\$188,000	\$9,422	\$8,000	\$205,420	\$1.52
Total Surveyed Facilities	912,120	\$1,262,900	\$233,872	\$177,100	\$1,673,870	\$1.84

The Courthouse square feet excludes approximately 250,000 square feet of covered parking garage. If this were included, total square feet of the Courthouse would be approximately 530,000. The square footage of the Bank of America building excludes the floor area of the parking garage as well.

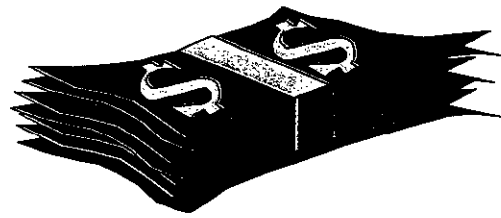
A copy of the City of Tallahassee utility rates may be found in the appendix.

Johnson Controls has a database of similar buildings to yours that we use to compare and benchmark utility costs. We can benchmark electric, water, trash hauling, sewage charges and gas. We compared your electric consumption with a JCI database of other detention facilities, courthouses and libraries in the nation and in Florida as indicated below:

Facility	Annual Electric Consumption (KWH/SF/YEAR)
3 Broward County Correctional Facilities totaling 666,000 sq. ft.	32.5 / 26.0**
Seminole County Correctional Facility	33.1
Leon County Jail	18.1
2 Sheriff's Offices in Texas and Florida	28.5
Leon County Sheriff's Offices	33.8
7 Libraries in Florida	24.5
Leon County Central Library	29.2
9 Courthouses in Florida	23.4
Leon County Courthouse	23.6

** Before and after recent performance contracting project with Johnson Controls.

The data suggests that the Leon County Government facilities are now consuming electric energy at a rate that is less than average in the Jail, perhaps slightly higher than average in the Sheriff's Office and Library and an average amount of electric energy in the Courthouse. However, through our preliminary audit of your facilities, Johnson Controls was able to identify a number of areas of operational cost reduction. Detailed preliminary operational savings estimates are provided for your review in the following sections of this report.



Operational Savings Summary

When **Johnson Controls** analyzes a customer's facility to reduce operating costs, we review numerous options for potential savings to the bottom line. Leon County Government will find that saving money on energy and maintenance will only be part of the overall cost reduction that will take place as a result of implementing a performance contracting program with Johnson Controls. Allowing the operational savings to pay for numerous items that would ordinarily be purchased with capital dollars could reduce the capital budget.

Listed below are some specific areas that we feel operational dollars can be saved at Leon County Government.

- ☒ **Utility cost reduction**
- ☒ **Reduction of equipment repairs made to aging equipment**
- ☒ **Labor productivity gains due to replacement of older equipment**
- ☒ **Reduction of financial risk due to major equipment failures**
- ☒ **Prevention of unscheduled equipment failures**
- ☒ **Capital budget savings from the facility master plan**

Based upon our preliminary audit, the following are preliminary utility savings estimates that would likely result from implementing the FIMs previously enumerated at the Courthouse, Main Library, Bank of America, Jail and Sheriff's Administration Facilities that were evaluated.

Jail and Sheriff's Administration Facilities and FIMs	Preliminary Annual Utility Savings Estimate \$ *
Jail Conversion to Interruptible Electric Rate FIM	\$72,000
Sheriff Conversion to Interruptible Electric Rate FIM	17,000
Jail all other FIMs	92,000
Sheriff all other FIMs	15,000
Total (does not simply add)	\$167,000

Courthouse, Main Library and Bank of America Facilities and FIMs	Preliminary Annual Utility Savings Estimate \$ *
Courthouse Conversion to Interruptible Electric Rate FIM	\$63,000
Courthouse all other FIMs	57,000
Main Library all FIMs	35,000
Bank of America Building	25,000
Total (does not simply add)	\$160,000

* Excludes any maintenance and equipment replacement savings that will accrue from a project.



Reduced equipment repairs

Installation of new equipment will reduce the repair costs of those areas retrofitted. In a final comprehensive audit, JCI will examine your repair records to capture the true savings of each piece of equipment that we look to replace.



Utility Cost Reduction

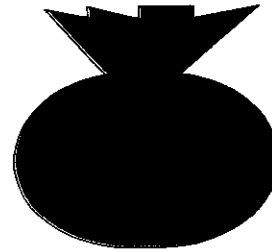
There are several methods that we will use to reduce utility costs. These reductions will come from making upgrades to the facilities. The amount of the overall utility reduction will vary depending on which conservation measures are chosen for the program, but the overall utility cost reduction could exceed \$329,000 dollars annually for the five county facilities that were evaluated.



Labor Productivity Increases

When any activities arise in the facility that could have been avoided through the use of new technology and equipment or planned preventive maintenance, existing labor or existing contracted maintenance services are used. The use of this labor or contracted service may be less than optimal and may prevent the resources from performing other important tasks. This results in wasted resources that could be focused on other maintenance duties throughout Leon County Government facilities.

The productivity issue expands far beyond the maintenance function. Improved environmental conditions such as lighting, temperature, humidity and ventilation positively impact the comfort and productivity of all building occupants. Many of our private sector customers have focused very heavily on this savings since it directly impacts their bottom line costs and profits.



Capital Budget Savings

The cost of repairing or replacing equipment on an emergency basis can be overwhelming and should be avoided in order to conserve capital dollars. We will define the specific areas of capital savings for your facility as we move to the next step. The Johnson Controls program will help plan for equipment replacement, which would greatly reduce the financial risk to the Leon County Government in several ways:

- ☒ **Avoid unplanned equipment failures**
- ☒ **Obtain the benefits of new equipment now vs. over several years**
- ☒ **Utilize the value of today's dollars by avoiding project cost inflation**
- ☒ **Eliminate cost over runs due to continuous change orders**
- ☒ **Allow the operational savings to help fund the capital projects**

Other Benefits

- ☒ **Improved indoor environment quality**
- ☒ **Improved occupant comfort**
- ☒ **Improved lighting**
- ☒ **Increased asset value**
- ☒ **Enhanced public image**

Project Development Agreement

What is a Project Development Agreement (PDA)?

A PDA is a commitment between JCI and Leon County Government that a Partnership is established for the purpose of reducing the operating costs of the facilities. The development agreement will focus on the following areas:

- ☒ Utility costs
- ☒ Maintaining quality indoor environments reliably
- ☒ Capital expenditures
- ☒ Outside contracted services
- ☒ Rebate opportunities
- ☒ Material purchases
- ☒ Improving staff productivity
- ☒ Risk analysis
- ☒ Standardization for future remodeling and construction projects
- ☒ Outside consultative services

The deliverables from the Partnership are:

- ☒ A list of utility conservation measures that produce savings
- ☒ A list of facility improvement measures that help Leon County Government meet it's mission, such as the maintenance of quality environments to reliably meet the needs of occupants and facilitate activities performed in the buildings, that may or may not produce utility savings
- ☒ A list of utility rebates applicable to the above
- ☒ A list of specific operational savings - material - that can be reduced
- ☒ A list of specific operational savings - productivity - that can be enhanced
- ☒ A list of future capital funds that can be reduced or eliminated
- ☒ A list of the increased values of assets
- ☒ An evaluation of risks
- ☒ An evaluation of financial and legal liability
- ☒ A financial profile of the project

How do you move forward with a PDA?

There is a charge for the Agreement because numerous resources are used for the facility evaluation. With a written commitment to move forward with the program, if the predefined financial criteria are met, the cost is charged as part of the final project. However, the most popular version is to state the value of the Agreement, up front. There seems to be a comfort factor in the exposure of the financial risk. Because the value is stated, it becomes a budgeted item that must be allocated. We have found that the operations budget is normally chosen utilizing either the outside consultants or the utility budget category. The utility budget might be chosen if the audit is completed in the same fiscal year and the funds can be returned to that budget when the cost is absorbed as part of the project.

Approving the Agreement will get you into the proven process that will reduce operational costs.

Appendix

Performance Contracting
Project Development Agreement Between

Board of County Commissioners Leon County 301 S. Monroe Street Tallahassee, Florida 32301	AND	Johnson Controls, Inc. 4244 West Tennessee Street Tallahassee, Florida 32304
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Johnson Controls, Inc. (JCI) and the Customer named above agree as follows:

1. Evaluation Study

JCI agrees to undertake a detailed evaluation study of the Customer's Premises to determine the operational expenditures and characteristics of the Premises and to identify facility improvements and operational efficiency measures, procedures and other services that could be provided by JCI in order to improve the infrastructure and reduce the operating costs on the Premises. The Premises are defined for this Agreement as: the Courthouse, Main Library, Bank of America, Jail and Sheriff's Administration facilities. The Customer agrees to provide its complete cooperation in the conduct and completion of the study. JCI will provide to the Customer a written report which will include:

- (a) a list of specific facility improvements and operational efficiency measures that JCI proposes to install;
- (b) a description of the operating and maintenance procedures that JCI believes can reduce operating costs at the Premises;
- (c) an estimate of the operating costs that will be saved by the equipment and procedures recommended in the report;
- (d) a list of all items that were requested to be excluded by the Customer (i.e. run time reduction via occupancy sensors).

2. Records and Data

During the evaluation study, Customer will furnish to JCI upon its request, accurate and complete data concerning operational expenditures for the Premises, including the following data for the most recent three years from the effective date of this Agreement:

- occupancy and usage information;
- descriptions of any changes in the building structure or its heating, cooling, lighting, or other systems;
- actual utility bills supplied by the utility and other relevant utility records;
- descriptions of relevant operational or maintenance procedures utilized on the Premises;
- copies of budgets and subcontracts for operating the Premises;
- copies of representative current tenant leases, if any; and
- prior efficiency audits or studies of the premises or operating procedures, if any.

3. Preparation of Performance Contracting Project Agreement

Within 30 days after the submission to Customer of the report described under paragraph 1 of this Agreement, JCI will prepare and submit to the Customer a Performance Contracting Project Agreement to implement the facility improvements and operational efficiency measures, procedures, and services identified in the report that could reduce the Customer's overall expense in operating the Premises. This Performance Contracting Project Agreement shall be prepared on standard JCI contract forms, copies of which will be made available to Customer upon request.

4. **Price and Payment Terms**

The Customer agrees to pay to JCI the sum of _____ within 30 days after the delivery to the Customer of the report described under paragraph 1 of this Agreement.

Upon delivery of the report described under paragraph 1 of this Agreement, the Customer will be invoiced by JCI for the amount indicated above. However, should JCI and the Customer enter into the proposed Performance Contracting Project Agreement within 30 days after the delivery of the report described under paragraph 1 of this Agreement, this invoice will be canceled and this amount will become part of the Performance Contracting Project Agreement previously referred to in paragraph 3 above.

5. **Indemnity**

JCI and the Customer agree that JCI shall be responsible only for such injury, loss, or damage caused by the intentional misconduct or the negligent act or omission of JCI. JCI and the Customer agree to indemnify and to hold each other, including their officers, agents, directors, and employees, harmless from all claims, demands, or suits of any kind, including all legal costs and attorney's fees, resulting from the intentional misconduct of their employees or any negligent act or omission by their employees or agents. Neither JCI nor the Customer will be responsible to the other for any special, indirect, or consequential damages.

6. **Disputes**

If a dispute arises under this Agreement, the parties shall promptly attempt in good faith to resolve the dispute by negotiation. All disputes not resolved by negotiation shall be resolved in accordance with the Commercial Rules of the American Arbitration Association in effect at the time, except as modified herein. All disputes shall be decided by a single arbitrator. A decision shall be rendered by the arbitrator no later than nine months after the demand for arbitration is filed, and the arbitrator shall state in writing the factual and legal basis for the award. No discovery shall be permitted. The arbitrator shall issue a scheduling order that shall not be modified except by the mutual agreement of the parties. Judgment may be entered upon the award in the highest state or federal court having jurisdiction over the matter. The prevailing party shall recover all costs, including attorney's fees, incurred as a result of the dispute.

7. **Miscellaneous Provisions**

This Agreement cannot be assigned by either party without the prior written consent of the other party. This Agreement is the entire Agreement between JCI and the Customer and supersedes any prior oral understandings, written agreements, proposals, or other communications between JCI and the Customer. Any change or modification to this Agreement will not be effective unless made in writing. This written instrument must specifically indicate that it is an amendment, change, or modification to this Agreement.

JOHNSON CONTROLS, INC.		CUSTOMER	
By	Darrell E. Lloyd	By	Tony Grippa
Signature		Signature	
Title	Area General Manager	Title	Chair
Date		Date	

Electric Rates

Residential

Customer Charge \$4.94 single phase
\$16.80 three phase
Rate \$0.07185 per kWh
Nontaxable 0.0223

Commercial Non-Interruptible

Customer Charge \$6.00 single phase
\$22.00 three phase
Rate \$0.06109 per kWh

Commercial General Service Demand

Customer Charge Secondary Service \$40.00
Primary Service \$135.00
Rate - Electric \$0.03948 First 500 kWh per kW
\$0.03105 In Excess
Demand 7.25 per kW, Min of 10 kW or \$72.50

Commercial Large General Service Demand

Customer Charge Secondary Service \$40.00
Primary Service \$135.00
Rate - Electric 0.03908 First 500 kWh per kW
0.03105 In Excess
Demand 7.25 per kW
kVar ± \$0.22 per kVar ± 62% of kW

Commercial Interruptible General Service Demand

Curtailable Demand Credit \$3.90 per kW
Customer Charge Secondary Service \$40.00
Primary Service \$135.00
Rate - Electric 0.03908 First 500 kWh per kW
0.03105 In Excess
Demand 7.25 per kW
kVar ± \$0.22 per kVar ± 62% of kW

Commercial Small Interruptible General Service Demand

Customer Charge Secondary Voltage Service \$40.00
Primary Voltage Service \$135.00
Interruptible Demand Credit per kW \$2.70
Rate for all kWh \$0.03105
Demand 7.25 per kW
kVar ± \$0.22 per kVar ± 62% of kW

Gas Rates

Residential

Customer Charge \$7.00
Rate 1.32436 (G111-112;121-181)
Space Cooling 0.94746 (G113-119)

Commercial

Customer Charge \$12.00
Rate 1.18449 (G211-431)
Space Cooling 0.89149 (G811)

Commercial Small Interruptible Customer Charge \$150.00 Rate .91502 (G811;821-871;881)
Commercial Interruptible Customer Charge \$225.00 Rate .86502 (G812)
Commercial Large Interruptible Customer Charge \$225.00 Rate .77802

Water Rates

Customer Charge \$5.10
Rate \$1.22 per 1,000 gals
Minimum \$8.15 (25 Units)

Sewer Rates

Customer Charge \$8.40
Rate \$2.68 per 1,000 gals

Water and Sewer Surcharge Leon County 37.5% Outside Leon County 50%

Fuel Adjustment Rate per kWh \$0.0129

Gross Receipts Tax (Effective 11/01/92) .0256408

Stormwater Rate eff. 10/00 \$6.25
eff. 10/99 \$6.04
eff 10/97 \$5.91
0 eff 10/95 \$5.75

(Impervious Area 1999 SYF = 1 Unit)

State Sales Tax (280) 1st \$5000
Over \$5000

Garbage Rate

Commercial \$16.80
Residential \$15.30
Complex (Dumpster) \$8.30

Fire Service

Single Family \$11.83
Single Family Attached/Multi-Family \$7.00

***Credit goes away on 4/2/01

****Churches not charged Fire Service as of 4/2/01

Commercial Square Footage Ranges

Square Footage Ranges	Commercial	Industrial/Warehouse
<1,999	\$15.25	\$5.17
2,000 - 3,499	\$30.42	\$10.42
3,500 - 4,999	\$53.33	\$18.18
5,000 - 9,999	\$76.17	\$26.01
10,000 - 19,999	\$152.25	\$52.03
20,000 - 29,999	\$304.58	\$104.07
30,000 - 39,999	\$456.83	\$156.18
40,000 - 49,999	\$609.08	\$208.22
50,000 or greater	\$761.42	\$260.09

Severance Tax \$7.33 per 1,000 sq. feet

Electricity Tax \$8.83 per 1,000 sq. feet

Nontaxable Amount 0.6495

(F800)

Surcharge-outside 10%

Space Cooling .87162 (G631)
Space Cooling .83162
Space Cooling .76202

Water and Sewer Rates

Size	Water	units Included	Sewer
5/8	\$ 8.15	25	\$ 8.40
1	\$ 20.38	125	\$ 21.00
1 1/2	\$ 40.75	292	\$ 42.00
2	\$ 65.20	493	\$ 67.20
3	\$ 130.40	1,027	\$ 134.40
4	\$ 203.75	1,628	\$ 210.00
6	\$ 407.50	330	\$ 420.00
7	\$ 652.00	530	\$ 672.00